

**ABSTRACT**

5                   **MULTI-NODE HFC DIVERSE ROUTE RECOVERY ALGORITHM  
                  USING MULTI-STAGE, WIDE-MODE MARSHAL WITH  
                  BRANCH FAILURE DETECTION**

10               A method for synchronizing transmitters within a communications network by  
utilizing wide-mode marshaling. Wide-mode marshaling increases the bandwidth dedicated  
to performing a marshaling process, thereby allowing a controller to quickly marshal the  
transmitters. Within a TDMA network, a TDMA frame includes a header portion and a  
multi-channel portion. Each of the transmitters within a TDMA network transmits during an  
assigned time-slot of the TDMA frame. To marshal a transmitter, the transmitter is requested  
15           to transmit a ranging signal to a central controller. If the ranging signal is received during the  
header portion of the TDMA frame, the controller can accurately detect the ranging signal.  
However, for longer propagation delays, the length of the header is insufficient. Wide-mode  
marshaling resolves this by silencing some or all of the transmitters to increase the bandwidth  
for receiving the ranging signal.

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